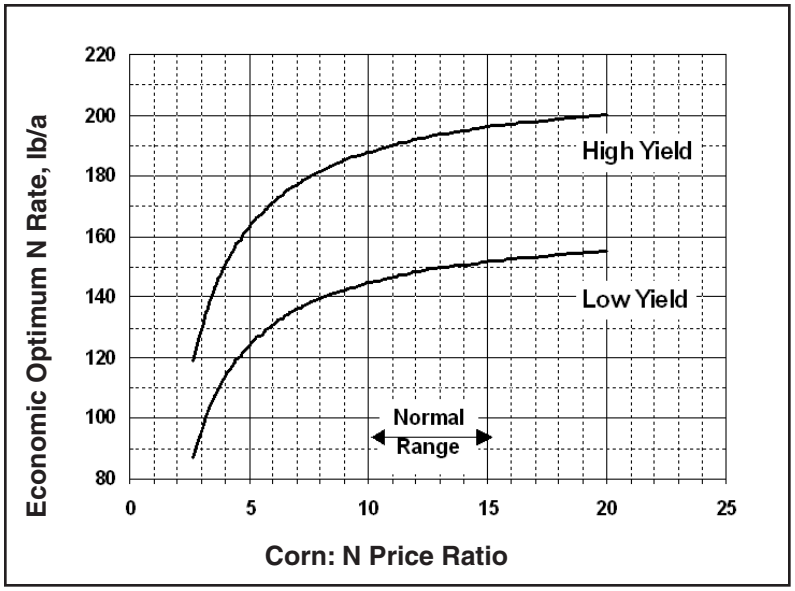

Figure 4. The effect of Corn:N price ratio on economic optimum N rates for corn at two yield levels.

Under no-till and conservation tillage systems, surface or subsurface N applications may also increase crop recovery of applied N by reducing N immobilization by the surface crop residue. Subsurface N placement may also increase N use efficiency by about 10 percent, but this must be balanced against whether any additional application costs might be incurred.

This discussion has focused on the optimum use of N in crop production. However, higher energy prices have also affected diesel fuel prices and many other farm input costs. Rising input costs and flat commodity prices may create a situation where the expected revenue from the sale of the crop will not cover out-of-pocket costs, making a particular field or crop unprofitable. These cost increases may also change the relative profitability among cropping alternatives, creating incentives to change the crop selection or to adjust the crop mix. The overall impact of these changes on the profitability of individual crops should be assessed by developing enterprise budgets. NCSU publishes budgets for selected crops, and these can be used as templates for developing budgets for specific farm situations.

In summary, economic optimum N rates will be reduced during periods when N prices are unusually high relative to crop prices. However, these reductions should be relatively small compared to the optimum fertilization rates under more typical fertilizer N and crop prices. A small reduction in yield can be expected, but this can be minimized by employing sound agronomic practices. Growers should also evaluate the cost effectiveness of changes in N management practices that will increase the efficiency of fertilizer N use by the crop.

Additional resources

Best Management Practices for Agricultural Nutrients. 1997. J. P. Lilly. North Carolina Cooperative Extension Service. AG-439-20.

The Economics of Fertilizer Management. 2002. D. H. Hardy, D. L. Osmond, and Ada Wossink. North Carolina Cooperative Extension Service. AG-439-45.

An Overview of Nutrient Management with Economic Considerations. 2002. D. H. Hardy, D. L. Osmond, and Ada Wossink. North Carolina Cooperative Extension Service. AGW-439-55

Soil Tests for Corn Nitrogen Recommendations and Their Relationships with Soil and Landscape Properties. 2005. J. D. Williams. Dissertation. North Carolina State University.

Additional soil fertility and nutrient management information at http://www.soil.ncsu.edu/

North Carolina enterprise budgets are available at http://www.ag-econ.ncsu.edu/extension/Ag_budgets.html

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